Session 019: Fate of Dispersed Oil
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Session Overview
The session focused on the fate of oil dispersed by physical turbulence, with or without the addition of chemical dispersants. Several described biodegradation, but physical processes such as emulsification, photooxidation and the binding of oil to sand and clay grains were also described. The experiments ranged from the laboratory to the field, and several talks showed how research in these different domains led to a congruent understanding of ‘the real world’.

Session Highlights
- Two talks focused on whether dispersants have measurable effects beyond the designed one of getting oil slicks off the surface (or preventing their formation in subsea releases). While there is still subtle disagreement, it is clear that the rate of oil biodegradation of small dispersed droplets is much faster than when oil is present as a slick.
- There have been dramatic improvements in understanding the composition of weathered and biodegraded oil with very high resolution mass spectrometry. Three talks described some of this progress with samples from experiments and oil-impacted parts of the Gulf of Mexico. One conclusion that might change widespread opinion is that only 20 of 112 sediment samples collected in the spill area in 2010, 2011 and 2014 unequivocally contained oil from the Macondo reservoir.
- Exciting microscopy of oil droplets in flowing seawater has identified enormous (on the scale of the droplet) biofilm ‘streamers’ which must surely influence the hydrodynamics of those droplets, including their rise velocity.
- Unfortunately, there was only limited interest from regulatory and responder organizations, although oil companies were reasonably represented. A real gap is an absence of a venue where academics can learn about the true scale of oil spills and clean-up operations so that synergistic research can be accomplished.